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MCKENNA LONG & ALDRIDGE LLP
1900 K STREET, NW
WASHINGTON, DC 20006

EXAMINER	
FLANAGAN, KRISTA M	

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 06/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/721,786	JUN, JUNG SIG	
	Examiner	Art Unit	
	Krista M. Flanagan	2631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,14,19 and 22* is/are rejected.

7)☒ Claim(s) *6-13,15-18,20, 21 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/21/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the drawings refer to a "phase separator" while the specification refers to a "phase splitter".

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "303" and "3030" have both been used to designate phase splitter in figure 3 and its description. Reference characters "309" and "407" have both been used to designate the pre-filter in figure 4 and its description. It is believed that reference character in the specification should be changed to "407". Reference characters "106" and "108" have both been used to designate the carrier recovery in figure 1 and the specification in paragraphs [0008] and [0015]. Reference characters "104" and "105" have both been used to designate the A/D converter in figure 2. Also, reference characters "107" and "108" have both been used to designate the symbol clock recovery in figure 1.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "107" has been used to designate both symbol clock recovery and resampler.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "507c" has been used to designate both a multiplier and a squarer in figure 5 and its description. The same has been done with reference characters "605a" and "605b" in figure 6 and its description.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 313, 402, 411, and 604.

6. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

7. The disclosure is objected to because of the following informalities: It is believed that "A/S converter" in paragraph [0048] should be "A/D converter". "Caluculators" in paragraph [0087] should be changed to "calculators". "Additoner" in paragraph [0087] should be changed to "adder".

Appropriate correction is required.

Claim Objections

8. Claims 12 and 13 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to

cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 13 is exactly the same as claim 11 and claim 12 is the same as claim 10 from which it depends except that its operator acts on the A/D converter whereas claim 10 acts on the resampler already.

9. Claims 2, 7, 9, 11, 13, 16, 18, 21, and 23 are objected to because of the following informalities: Regarding claim 2, it is believed that the second line "signal into a passband signal by sampling a fixed frequency generated by the fixed oscillator or" should read "signal into a passband signal by sampling **the analog signal at** a fixed frequency generated by the fixed oscillator or". Regarding claims 7, 9, 11, 13, 16, 18, 21, and 23 it is believed that "or calculate an absolute value for each" should read "or calculates an absolute value for each". Appropriate correction is required.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 22 recites the limitation "the first resampler" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1-5, 14 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,673,293 to Scarpa et al.

15. Regarding claim 1, Scarpa discloses a digital TV receiver, comprising: an A/D converter for converting an analog signal into a digital signal (See figure 1, block 114 and column 3, lines 27-30); a carrier recovery for converting the digital passband signal into a digital baseband signal (See figure 1, blocks 120 and 135 and column 7, lines 9-17); and a symbol clock recovery for detecting timing error information by calculating digital-real/imaginary-passband-signals of the A/D converter or digital-real/imaginary-baseband-signals of a carrier recovery (See figure 1, block 147; column 8, lines 50-59; and column 5, lines 36-45), and for generating and outputting two times the frequency of the symbol clock corrected from the detected timing error information (See figure 1, block 147 and column 5, lines 14-19).

16. Regarding claim 2, which inherits all of the limitations of claim 1, Scarpa discloses a digital TV receiver, wherein the A/D converter converts the analog signal into a passband signal by sampling the analog signal at a fixed frequency generated by the fixed oscillator or by sampling the analog signal with two times the frequency of the symbol clock (See column 8, lines 37-49).

17. Regarding claim 3, which inherits all of the limitations of claim 2, Scarpa discloses a digital TV receiver, wherein the fixed frequency generated from the fixed oscillator is higher than the two times the frequency of the symbol clock (See column 8, lines 37-49).

18. Regarding claim 4, which inherits all of the limitations of claim 1, Scarpa discloses a digital TV receiver, wherein the carrier recovery multiplies a standard carrier signal by the digital passband signal through the carrier recovery and converts into the digital baseband signal (See figure 1, block 130 and column 7, line 9- column 8, line 4).

19. Regarding claim 5, which inherits all of the limitations of claim 1, Scarpa discloses a digital TV receiver which further comprises a first resampler for resampling the digital real/imaginary baseband signals into the two times the frequency of the symbol clock and interpolating each of the signals (See column 5, line 64 - column 6, line 55).

20. Regarding claim 14, Scarpa discloses a digital TV receiver, comprising: an A/D converter for taking a sample of a fixed frequency from an analog passband signal and converting into a digital passband signal (See figure 1, block 114 and column 3, lines 27-30); a carrier recovery for multiplying a standard carrier signal generated from the process of the carrier recovery of the digital passband signal and converting into the digital baseband signal (See figure 1, block 130 and column 7, line 9- column 8, line 4); a first resampler for taking a sample of two times the frequency of the symbol clock from the digital baseband real/imaginary signals generated from the carrier recovery and interpolating (See column 5, line 64 - column 6, line 55); and a symbol clock recovery for detecting timing error information from the digital passband signal or the digital baseband signal and generating and outputting the two times the frequency of the symbol clock corrected from the detected timing error information (See figure 1, block 147 and column 5, lines 14-19).

21. Regarding claim 19, Scarpa discloses a digital TV receiver, comprising: an A/D converter for taking a sample of a fixed frequency from an analog passband signal and converting into a

digital passband signal (See figure 1, block 114 and column 3, lines 27-30); a carrier recovery for multiplying a standard carrier signal generated from the process of the carrier recovery of the digital passband signal and converting into the digital baseband signal (See figure 1, block 130 and column 7, line 9- column 8, line 4); and a symbol clock recovery for detecting timing error information from the digital passband signal or the digital baseband signal and generating and outputting the two times the frequency of the symbol clock corrected from the detected timing error information (See figure 1, block 147 and column 5, lines 14-19).

Double Patenting

22. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

23. Claims 1-5, 14 and 19 are provisionally rejected under the judicially created doctrine of double patenting over claims 1-5, 14 and 19 of copending Application No. 10/720,472. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: Please see the chart below – variations and explanations are in bold.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

#	Current Application	'472 Application	#
1	A digital TV receiver, comprising: an A/D converter for converting an analog signal into a digital signal; a carrier recovery for converting the digital passband signal into a digital baseband signal; and a symbol clock recovery for detecting timing error information by calculating digital-real/imaginary-passband-signals of the AJD converter or digital-real/imaginary-baseband-signals of a carrier recovery, and for generating and outputting two times the frequency of the symbol clock corrected from the detected timing error information. **No substantial variation: Squaring the added value could be read as part of the calculating.**	A digital TV receiver, comprising: an A/D converter for converting an analog signal into a digital signal; a carrier recovery for converting the digital passband signal into a digital baseband signal; and a symbol clock recovery for detecting timing error information by calculating digital-real/imaginary-passband-signals of the A/D converter or digital-real/imaginary-baseband-signals of a carrier recovery **and squaring the added value**, and for generating and outputting two times the frequency of the symbol clock corrected from the detected timing error information.	1
2	The digital TV receiver of claim 1, wherein the A/D converter converts the analog signal into a passband signal by sampling the analog signal at a fixed frequency generated by the fixed oscillator or by sampling the analog signal with two times the frequency of the symbol clock. **No variation.**	The digital TV receiver of claim 1, wherein the A/D converter converts the analog signal into a passband signal by sampling the analog signal at a fixed frequency generated by the fixed oscillator or by sampling the analog signal with two times the frequency of the symbol clock.	2
3	The digital TV receiver of claim 2, wherein the fixed frequency generated from the fixed oscillator is higher than the two times the frequency of the symbol clock. **No variation.**	The digital TV receiver of claim 2, wherein the fixed frequency generated from the fixed oscillator is higher than the two times the frequency of the symbol clock.	3
4	The digital TV receiver of claim 1, wherein the carrier recovery multiplies a standard carrier signal by the digital passband signal through the carrier recovery and converts into the digital baseband signal. **No variation.**	The digital TV receiver of claim 1, wherein the carrier recovery multiplies a standard carrier signal by the digital passband signal through the carrier recovery and converts into the digital baseband signal.	4
5	The digital TV receiver of claim 1 further comprises a first resampler for resampling the	The digital TV receiver of claim 1 further comprises a first resampler for resampling	5

	digital real/imaginary baseband signals into the two times the frequency of the symbol clock and interpolating each of the signals. **No substantial variation.**	the digital real/imaginary baseband signals into the two times frequency of the symbol clock **frequency** and interpolating each of the signals.	
14	A digital TV receiver, comprising: an A/D converter for taking a sample of a fixed frequency from an analog passband signal and converting into a digital passband signal; a carrier recovery for multiplying a standard carrier signal generated from the process of the carrier recovery of the digital passband signal and converting into the digital baseband signal; a first resampler for taking a sample of two times the frequency of the symbol clock from the digital baseband real/imaginary signals generated from the carrier recovery and interpolating; and a symbol clock recovery for detecting timing error information from the digital passband signal or the digital baseband signal and generating and outputting the two times the frequency of the symbol clock corrected from the detected timing error information. **No variation.**	A digital TV receiver, comprising: an A/D converter for taking a sample of a fixed frequency from an analog passband signal and converting into a digital passband signal; a carrier recovery for multiplying a standard carrier signal generated from the process of the carrier recovery of the digital passband signal and converting into the digital baseband signal; a first resampler for taking a sample of two times the frequency of the symbol clock from the digital baseband real/imaginary signals generated from the carrier recovery and interpolating; and a symbol clock recovery for detecting timing error information from the digital passband signal or the digital baseband signal and generating and outputting the two times frequency of the symbol clock frequency corrected from the detected timing error information.	**14**
19	A digital TV receiver, comprising: an A/D converter for taking a sample of a fixed frequency from an analog passband signal and converting into a digital passband signal; a carrier recovery for multiplying a standard carrier signal generated from the process of the carrier recovery of the digital passband signal and converting into the digital baseband signal; and a symbol clock recovery for detecting timing error information from the digital passband signal or the digital baseband signal and generating and outputting the two times the frequency of the symbol clock corrected from the detected timing error information. **No substantial variation.**	A digital TV receiver, comprising: an A/D converter for taking a sample of a fixed frequency from an analog passband signal and converting into a digital passband signal; a carrier recovery for multiplying a standard carrier signal generated from the process of the carrier recovery of the digital passband signal and converting into the digital baseband signal; and a symbol clock recovery for detecting timing error information from the digital passband signal or the digital baseband signal and generating and outputting the two times frequency of the symbol clock **frequency** corrected from the detected timing error information.	**19**

Allowable Subject Matter

24. Claims 6-13, 15-18, 20, 21 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

25. The following is a statement of reasons for the indication of allowable subject matter: Matter not found in the prior art search is in bold.

26. Regarding claims 6, 10 and 15, prior art fails to disclose a digital TV receiver, wherein the symbol clock recovery comprises: **an operator for calculating each of the digital baseband real/imaginary signals interpolated and outputted from the first resampler, and outputting the calculation**.

27. Regarding claims 7, 9, 11, 13, 16, 18, 21 and 23, prior art fails to disclose a digital TV receiver, wherein **the operator squares each of the digital baseband real/imaginary signals interpolated and outputted from the first resampler, adds the two squared signals, and outputs the calculation**; or calculate an absolute value for each of the digital baseband real number/imaginary signals interpolated and outputted from the first resampler, adds the absolute value of the two signals, and outputs the calculation.

28. Regarding claims 8 and 17, prior art fails to disclose a digital TV receiver, wherein the symbol clock recovery comprising: **a second resampler for resampling the digital passband real/imaginary signals outputted from the A/D converter into the two times the frequency of the symbol clock and interpolating each of the signals; a operator for calculating the digital passband real/imaginary signals outputted from the second resampler and outputting the calculation**; a pre-filter for passing only a frequency of a particular band to

recover the symbol clock from the output of the operator; a timing error detector for detecting timing error information from the output of the pre- filter; **a NCO for generating two times the frequency of the symbol clock recovered according to low pass signal component of the filtered timing error information and outputting to the first and the second resamplers.**

29. Regarding claim 12, prior art fails to disclose a digital TV receiver, wherein the symbol clock recovery comprises: **an operator for calculating each of the digital baseband real/imaginary signals interpolated and outputted from the A/D converter, and outputting the calculation**; a pre-filter for passing only a frequency of a particular band to recover the symbol clock from the output of the operator; a timing error detector for detecting timing error information from the output of the pre- filter; a filtering unit for filtering only the low passband signal from the timing error information outputted from the timing error detector; and a variable oscillator for generating two times the frequency of the symbol clock recovered according to low pass signals of the filtered timing error information and outputting to the A/D converter.

Regarding claim 20, prior art fails to disclose a digital TV receiver, wherein the symbol clock recovery comprises: **a operator for calculating each of the digital baseband real/imaginary signals outputted from the carrier recovery, and outputting the calculation**; a pre-filter for passing only a frequency of a particular band to recover the symbol clock from the output of the operator; a timing error detector for detecting timing error information from the output of the pre-filter; a filtering unit for filtering only the low passband signal from the timing error information outputted from the timing error detector; and a variable oscillator for generating two times the frequency of the symbol clock recovered according to low pass signal component of the filtered timing error information and outputting to the A/D converter.

Conclusion

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. U.S. Patent No. 5,872,815 to Strolle et al. discloses an apparatus for generating timing signals for a digital television signal receiver.

b. U.S. Patent No. 6,160,443 to Maalej et al. discloses a dual automatic gain control in a QAM demodulator.

c. U.S. Patent No. 6,862,325 to Gay-Bellile et al. discloses a multi-standard channel decoder.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krista M. Flanagan whose telephone number is (571) 272-2203. The examiner can normally be reached on Monday - Friday, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Flanagan
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